

# SHIP OPERATIONAL CARBON INTENSITY PLAN

(PART III OF THE SEEMP)

Ship's name	CR VIVA
CR number	1038

此為CR SEEMP Part III 範本

正式填寫時，請記得刪除灰底色處的文字

以及相對應的文字框(若有)

若填寫上有任何問題，可洽詢CR EEXI Service Team

Email : [eexi@crclass.org](mailto:eexi@crclass.org)

1 Review and update log 審查及更新記錄

Date/timeline	Updated parts	Developed by	Implemented by
<1 <sup>st</sup> time>			
<2 <sup>nd</sup> time>			
Etc.			

**2 Required CII over the next three years, attained CII and rating over three consecutive years** 未來3年的CII要求值、連續3年的CII達成值和CII評級

Name of ship:	CR VIVA		IMO number	9998866
Company	CR		Year of delivery	2000
Flag	R.O.C.		Ship type	BULK CARRIER
Gross tonnage	106688		DWT	2022XX
Applicable CII	Supply-based CII		<input checked="" type="checkbox"/> AER: <input type="checkbox"/> cgDIST	
Year	Required annual operational CII	Attained annual operational CII (before any correction)	Attained annual operational CII	Operational carbon intensity rating (A, B, C, D or E):
<year -1>				
<year -2>				
<year -3>				
	Required annual operational CII			
<year>: 2023	2.23			
<year + 1> 2024	2.18			
<year + 2> 2025	2.14			

現為2022年此處尚無資料，2024年時才會有2023年的DCS資料作計算，可比較CII要求值和達成值的差異，以及CII評級

**說明：**

1. Attained annual operational CII：輸入資料依據MARPOL Annex VI 第27條規定(燃油資料收集系統)及SEEMP II計劃涵蓋之年度燃油消耗量和航行距離。
2. 若使用CII準則G5的航程調整或修正係數，請提供計算過程所需之輸入資料及參數。
3. Required annual operational CII：使用MARPOL Annex VI 第28條規定計算年度營運CII要求值。
4. CII數值可使用CR CII Calculator作計算，若有需求，請洽詢CR EEXI Service Team (eexi@crclass.org)

**3 Calculation methodology of the ship's attained annual CII, including required data and how to obtain these data as far as not addressed in Part II 請說明船舶年度 CII 達成值的計算方法，包括所需的數據以及如何獲得這些數據(若SEEMP II未涵蓋到)**

Description
<p>說明：</p> <ol style="list-style-type: none"> <li>1. 使用MARPOL Annex VI 第28條規定方法及IMO發佈的CII Guidelines, G1計算年度營運CII達成值及trial CII。</li> <li>2. 資料收集應遵循MARPOL Annex VI 第27條關於燃料油資料收集系統的相關方法和要求（應與SEEMP II相同）。SEEMP Part II 未提及的資料，必須在此處提供。</li> <li>3. 若適用，且依照CII Guidelines, G5使用修正係數和航程調整來計算CII，亦須在此處說明計算流程及資料。</li> </ol> <p><b>3.1 Calculation methodology for attained CII without correction factors or voyage adjustments (CII Guidelines, G1)</b></p> <p>The attained annual CII of individual ships is calculated as the ratio of the total mass of CO<sub>2</sub> (M) emitted to the total transport work (W) undertaken in a given calendar year, as follows:</p> $\text{attained CII}_{\text{ship}} = M / W$ <p>'M' is the total mass of CO<sub>2</sub> emissions and is the sum of CO<sub>2</sub> emissions (in grams) from all the fuel oil consumed on board a ship in a given calendar year and is calculated as</p> $M = \sum FC_j \times CF_j$ <p>Where:</p> <ul style="list-style-type: none"> <li>• j is the fuel oil type.</li> <li>• FC<sub>j</sub> is the total mass (in grams) of consumed fuel oil of type 'j' in the calendar year, as reported under IMO DCS:</li> <li>• CF<sub>j</sub> represents the fuel oil mass to CO<sub>2</sub> mass conversion factor for fuel oil type,</li> </ul> <p>'W' is the Transport work.</p> <p>In the absence of the data on actual transport work, the supply-based transport work (Ws) can be taken as a proxy, which is defined as the product of a ship's capacity, and the distance travelled in a given calendar year, as follows:</p> $W_s = C \times D_t$ <p>Where:</p> <ul style="list-style-type: none"> <li>• C represents the ship's capacity</li> </ul>

- For bulk carriers, tankers, container ships, gas carriers, LNG carriers, ro-ro cargo ships, general cargo ships, refrigerated cargo carrier and combination carriers, deadweight tonnage (DWT) should be used as Capacity.
- For cruise passenger ships, ro-ro cargo ships (vehicle carriers) and ro-ro passenger ships, gross tonnage (GT) should be used as Capacity.
- $D_t$  represents the total distance travelled (in nautical miles), as reported under IMO DCS.

船員/公司遵循船舶SEEMP II計畫中的程式來確定年度燃料消耗量（公噸）和航行距離（海裡）。這些數值在日曆年末（或更早）在下一日歷年的前三個月內向行政部門/RO報告。如果報告的數值與（RO）核實的數值之間存在差異，後者將被用於確定報告年度達到的CII。

一旦政府/RO完成了對達到的CII的核實，就會使用Appendix A中的資料收集系統和運營碳強度的標準化資料報告格式來向政府報告。

如果在自願的基礎上提出試驗碳強度指標(trial CII)，請使用2022 SEEMP準則 Appendix 4的標準資料報告格式。

### 3.2 Calculation Methodology for attained CII with correction factors or voyage adjustments (if applicable) (CII Guidelines, G5) 若不適用 請刪除本節

適用於2022年《CII計算的修正係數和航程調整的臨時指南》（CII指南(G5)），可採用航程調整或修正係數的船舶。將CII指南(G5)適用於本船的相關部分複製到本節，並簡要說明如何確定特定航程或時期的燃油消耗和航行距離（如適用）。由於現有的SEEMP II中沒有具體涉及計算燃料消耗和航行距離的方法，因此需要在此詳細說明。報告表格見2022 GUIDELINES FOR ADMINISTRATION VERIFICATION OF SHIP FUEL OIL CONSUMPTION DATA AND OPERATIONAL CARBON INTENSITY APPENDIX 2 SAMPLE OF THE COLLECTED DATA SUMMARIES。

### 3.3 Calculation Methodology for trial CII (if applicable) (CII Guidelines, G1). 若不適用 請刪除本節

適用於自願計算和報告試行CII的船舶。相關參數和計算方法如下，報告表格見2022 SEEMP準則 Appendix 4 及 2022 GUIDELINES FOR ADMINISTRATION VERIFICATION OF SHIP FUEL OIL CONSUMPTION DATA AND OPERATIONAL CARBON INTENSITY APPENDIX 2 - ADD 1。簡要描述收集資料和計算試驗CII的方法。

The following metrics are encouraged to be used for trial purposes, where applicable:

1. Energy Efficiency Performance Indicator (EEPI)

$$EEPI = M / (C \times DI)$$

2. cbDIST

$$cbDIST=M/(ALB \times Dt)$$

### 3. cDIST

$$cDIST=M/(Lanemeter \times Dt)$$

4. EEOI, as defined in MEPC.1/Circ.684 on Guidelines for voluntary use of the ship energy efficiency operational indicator (EEOI).

In the formulas above:

- the mass of CO<sub>2</sub> (M), the ship's capacity (C) and the total distance travelled (Dt) are identical with those used to calculate the attained CII of individual ships.
- DI means the laden distance travelled (in nautical miles) when the ship is loaded;
- ALB means the number of available lower berths of a cruise passenger ship; and
- Lanemeter means the length (in metres) of the lanes of a ro-ro ship.

#### 4 Three-year implementation plan 三年實施計劃

##### Description

說明：三年實施計畫描述了船舶預計採取的措施，以在未來三年內繼續實現所要求的年度營運CII。這些措施可以包括，但不限於以下所列出的措施。

##### 1. Fuel-efficient operations

- Improved voyage planning
- Weather routing
- Just in time
- Speed optimization
- Optimized shaft power

##### 2. Optimized ship handling

- Optimum trim
- Optimum ballast
- Optimum propeller and propeller inflow considerations
- Optimum use of rudder and heading control systems (autopilots)

##### 3. Hull and propulsion

- Hull maintenance
- Propulsion system
- Propulsion system maintenance
- Hull-resistance optimisation
- Propeller management
- Air lubrication
- Hull paint/ coatings management
- Biofilm mitigation
- Rotor sails
- Kites
- Wing sails

##### 4. Machinery and equipment

- Main- and auxiliary-engine optimisation
- Equipment and systems
- Waste Heat recovery
- Shaft generator

##### 5. Improved fleet management

##### Improved cargo handling

- Cargo heating and insulation
- Other measures for cargo-handling optimisation

## 6. Energy management

- Accommodation energy optimisation
- Use of renewable energy
- Use of shore-based power sources when at port (cold ironing)
- Energy conservation investigation projects
- Use of alternate fuel
- Training and awareness

## 7. Fuel type

## 8. Other measures

三年實施計畫應在設想和可行的範圍內是SMART ( 具體、可衡量、可實現、實際的和有時限 ) 的。包括：

.1 列出提高船舶能效和降低碳強度的措施，並說明實施的時間和方法，這是實現要求的營運CII所必需的。

.2 考慮到各項措施對營運碳強度的綜合影響，說明在實施所列措施後，如何實現所要求的營運CII。

.3 負責三年期實施計畫的公司人員，全年監測和記錄績效，以審查三年期實施計畫的有效性；以及

.4 識別可能妨礙提高能源效率和降低船舶碳強度措施有效性的障礙，包括為克服這些障礙可能採取的應急措施。



**4.1 Company personnel to be responsible for the three-year implementation plan, monitoring and recording performance** 負責三年實施計劃、監控和記錄績效的公司人員

XXX

**4.2 List of measures to be considered and implemented** 待考慮和實施的措施清單

說明：

公司要提供每一項節能措施的下列資訊：

1. 描述所列措施的實施方式和時間
2. 它對CII單獨和集體的影響（考慮到這些措施的綜合效果）。
3. 負責全年執行、監測和記錄績效的公司人員。
4. 可能妨礙措施有效性的障礙，包括為克服這些障礙可能採取的應急措施。
5. 根據所採取的措施及其對CII的影響，確定目標業務年度CII和相應的評級是什麼。

Measure	Impact on CII	Time and method of implementation and responsible personnel			Impediments and contingency measures	
		Milestone	Due	Responsible	Impediment	Contingencies
Speed optimization and Weather routing	Decrease the CII value by 0.5	This ship applies speed optimization and Weather routing on every voyage.	12/31/2023	XXX	The software shuts down accidentally, and couldn't be restarted.	After the software has planned for a voyage, make a copy and save in another computer, like having copies on board and in company. The software is installed both on board and in company.
Hull maintenance	Decrease the CII value by 0.5	Hull resistance is optimized by new technology-coating systems	1/31/2023	XXX	The ship collides with port side.	Fenders are positioned when approaching the harbor
		Milestone	Due	Responsible	Impediment	Contingencies
		Milestone	Due	Responsible	Impediment	Contingencies

**4.3 Calculation showing the combined effect of the measures and that the required operational CII will be achieved 顯示各項措施的綜合效果以及即將達成的實現所需的操作的營運 CII 要求值的計算結果**

Year	Required annual operational CII	Targeted operational annual CII	Targeted rating
<year>:2023	1.93	2.38	C
<year + 1>2024	1.89	2.33	C
<year + 2>2025	1.85	2.28	C

## 5 Self-evaluation and improvement 自我評估與改進

### Description

說明：

自我評價和改進的過程可以包括以下內容。

- 1.定期進行船上和公司內部審查，以驗證系統的實施和有效性。
- 2.改進，即實施預防或修改措施（公司內部負責人員應評估此類審計報告並實施糾正措施，包括預防或修改措施）；和
- 3.定期審查SEEMP和相關文件，以儘量減少對公司人員和船舶工作人員的行政和不必要的負擔的方式更新SEEMP。

自我評價和改進的內容可以包括以下內容。

- 1.評價的標準，包括要評價的要素，如監測的品質、記錄的保存、已實施措施的有效性（包括因果關係）和目標的實現。
- 2.在能源效率和碳強度方面，對所採取的不同措施的有效性進行評估。
- 3.哪些措施貢獻最大，貢獻多少，哪些措施沒有貢獻，因此效率不高，哪些船舶和/或公司的具體因素對CII有不利影響，如何改進這些因素。
- 4.在履約期結束前開始審查過程的時間表，以及在下一年實施新措施的時間表。
- 5.為解決缺陷和差異而確定的措施，包括矯正資料差距和系統弱點，改善執行情況的新措施（如培訓），以及必要時的新的碳強度改進措施。
- 6.在相關情況下，為使船舶達到更好的CII等級而採取的行動，包括對預期的額外碳強度降低的估計量化。
- 7.在適用的情況下，如果需要矯正行動的計畫，該計畫應包括6說明中所列的項目，以使船舶擺脫低劣的性能；和
- 8.在相關的情況下，確定導致無法實現CII目標的關鍵因素。

**6 Plan of corrective actions (if applicable) 矯正措施計劃 (如適用)**

Description
<p>說明：</p> <p>本節適用於三年內有一次CII達成值被評為E級或連續三年被評為D級之船舶。</p> <p>矯正措施的計畫應說明船舶預計採取的行動、實施這些行動的時間表，以及實施這些行動對船舶的CII等級的預期影響。應證明矯正行動將如何有助於實現所要求的年度營運CII，以確定矯正行動的有效性。在選擇適當的矯正措施時，應考慮到從以前採取的矯正措施中獲得的經驗及其有效程度。</p> <p>矯正行動的計畫應該是SMART (具體的、可衡量的、可實現的、實際的和有時限的)。包括：</p> <ol style="list-style-type: none"> <li>1.分析造成CII等級低下的原因。</li> <li>2.對已實施措施的表現進行分析。</li> <li>3.列出為實現所需的營運CII而需要在實施計畫中增加的額外措施和修訂措施，以及實施的時間和方法。</li> <li>4.指定一名公司人員，負責實施計畫中新增和修訂的措施，監測和記錄整個執行情況，並審查糾正措施的有效性；以及</li> <li>5.確定提高能源效率和降低船舶碳強度的措施的有效性可能遇到的障礙，包括為克服這些障礙可能採取的額外應急措施以及如何克服這些障礙。</li> </ol>

**6.1 Analysis of causes for inferior CII rating CII評級不佳的原因分析**

Cause	Analysis of effect	Actions

**6.2 Analysis of measures in the implementation plan 實施計劃措施分析**

Measure	Analysis of effect	Actions

6.3 List of additional measures and revised measures to be added to the implementation plan **擬**

加入實施計畫中的補充措施和修訂措施清單

Measure	Impact on CII	Time and method of implementation and responsible personnel			Impediments and contingency measures		
		Milestone	Due	Responsible	Impediment	Contingencies	

## Appendix A STANDARDIZED DATA REPORTING FORMAT FOR THE DATA COLLECTION SYSTEM AND OPERATIONAL CARBON INTENSITY TO THE ADMINISTRATION

Name of the ship		IMO number	
Company		Year of delivery	
Flag		Ship type	
Gross Tonnage		DWT	
Applicable CII		<input type="checkbox"/> AER: <input type="checkbox"/> cgDIST	
Operational carbon intensity rating		<input checked="" type="checkbox"/> A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input checked="" type="checkbox"/> D <input checked="" type="checkbox"/> E	
CII for trial purpose (none, one or more on voluntary basis)		<input checked="" type="checkbox"/> EEPI <input checked="" type="checkbox"/> cbDIST <input checked="" type="checkbox"/> cDIST <input checked="" type="checkbox"/> EEOI	

Attained annual operational CII before any correction factors (AER in g CO <sub>2</sub> /dwt.nm or cgDIST in g CO <sub>2</sub> /gt.nm)	
Attained annual operational CII (AER in g CO <sub>2</sub> /dwt.nm or cgDIST in g CO <sub>2</sub> /gt.nm)	
End date for annual CII (dd/mm/yy) *	
Start date for annual CII (dd/mm/yy) *	
Attained EEDI (if applicable)	
Attained EEXI (if applicable)	
EEPI (gCO <sub>2</sub> /dwt.nm)	
cbDIST (gCO <sub>2</sub> /berth.nm)	
cbDIST (gCO <sub>2</sub> /m.nm)	
EEOI (gCO <sub>2</sub> /t.nm or others)	
.....	
.....	
IMO number	
End date for DCS (dd/mm/yy)	
Start date for DCS (dd/mm/yy)	